

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-27 (Cancelled)

28. (Previously Presented) A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising:

a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array;

a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and a computer for executing the computer program.

29. (Currently Amended) The system of claim 28 wherein data signal intensities emanating from discrete positions on the surface of the molecular array include:

radiation emitted by radioisotopes incorporated into molecules bound to features of the molecular array; and

fluorescent emission from fluorophores incorporated into molecules bound to features of the molecular array; and

~~light emission from chemoluminescent moieties incorporated into molecules bound to features of the molecular array.~~

30. (New) A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising:

- (a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array;
- (b) calculating an actual result of a function on pixels of the image lying in a second pattern;
- (c) comparing the result of step (b) with an expected result which would be obtained if the second pattern had a predetermined orientation on the array; and
- (d) when the results of the comparison in step (c) are outside a predetermined difference, then altering the orientation of the second pattern on the array and repeating steps (b) and (c), and repeating the foregoing as needed until the results of the comparison are within the predetermined difference.

31. (New) The method of claim 30 wherein:

the features are arranged in a rectilinear grid and the pattern comprises a rectilinear grid of rows and columns; and

step (b) comprises calculating row and column vectors by summing pixels in the rows and columns.